REMARKS/ARGUMENTS

Applicants respectfully request further examination and reconsideration in view of the above amendments and the arguments set forth fully below. In the Office Action dated May 23, 2008, claims 1-24 have been rejected. In response, the Applicants have amended claim 17. Accordingly, claims 1-24 are still pending. Favorable reconsideration is respectfully requested in view of the amended claim and the arguments set forth fully below.

Rejection Under 35 U.S.C. §103

Claims 1-4, 9-12 and 17-20 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,867,769 to Toriya et al. (hereinafter Toriya) in view of U.S. Patent No. 6,798,411 to Gorman (hereinafter Gorman). The Applicants respectfully disagree with this rejection.

Toriya discloses a reversible rounding operation between a lattice polygon model and a free-form surface model. The Toriya reference teaches generating a free-form surface model by applying linear transformation to a lattice polygon model to generate vertices of the free-form surface model corresponding to the vertices of the lattice polygon model. Referring to Figure 11 of the Toriya reference, it is clear that Toriya teaches obtaining vertices of a free-form surface model corresponding to vertices of a lattice polygon model, and in step 2, obtains edges of the free-form surface model corresponding to the edges of the polygon model and interprets patches into the edge structure accordingly in step 3 in order to effectuate the generation of the free-form surface model by reversible rounding operation. While vertices of a lattice polygon model are considered in the Toriya reference, the Toriya reference clearly does not teach forming a linear index array whose elements define the image elements of the polygon model by pointing at the vertices of each image element.

Within the Office Action, column 2, lines 37-46 of Toriya is cited to support that the "matched vertex" may be considered the same as the "active part" of the linear index array of the present invention. As discussed above, Toriya does not teach a linear index array, and thus such an interpretation cannot hold, as Toriya only discloses how vertices of the lattice polygon model are matched with vertices of a free-form surface model such as to allow coordinates of a matched vertex to be obtained through linear transformation. As explained previously, Toriya deals with two different kinds of models, i.e. lattice polygon model and free-form surface

model, whereas the system and method of the present application deals with the same type of model, i.e. polygon model, and further relates to the complexity of the model changing. Therefore, Toriya does not teach forming a linear index array comprising an active part, wherein image elements defined by the elements of the active part are included in the polygon model part to be presented graphically, as Toriya teaches vertices of a lattice polygon model being matched with vertices of a free-form surface model.

Within the Office Action it is further stated that the second reference, Gorman, teaches explicitly the linear index array comprising an active part as in Figure 6, after creating the mesh 112, the software 110 then uses mesh reduction techniques to simplify the mesh. Actually, Gorman discloses a way to reduce the amount of data needed to represent a two-dimensional image. The starting point is a two-dimensional image made out of pixels. Pixels are selected as edges of a two-dimensional polygon mesh. The polygon mesh is simplified in such a manner that the polygon mesh is drawn by filling the polygons with colors corresponding at least partially to the colors of the original pixels. The result is a simplification of the original image.

In the present application, the starting point is a three-dimensional polygon model. Its size, when drawn, varies depending on the distance of the observer and the three-dimensional space. This difference in starting points is significant as the solutions used for two-dimensional models cannot be applied to three-dimensional models. In the three-dimensional model, the number of pixels cannot be controlled if the model can be observed freely as in the present application. The two-dimensional image does not have depth, so it cannot have the problems of the present application either which relate to the presentation of the three-dimensional model in space.

Within the Office Action, reference is further made to Figure 18B and column 3, lines 37-41, disclosing a variety of mesh reduction techniques including anti-collapsing, vertex clustering, vertex decimation. The Office Action states that vertex decimation would keep the active elements, and then jumps back to Toriya, column 4, lines 25-32, wherein vertices of a free-form surface model that correspond to vertices of a lattice polygon model referred to in the vertex coordinate table are calculated. However, as stated above, neither Toriya nor Gorman teach forming a linear index array, nor modifying an active part of the index array, as is discussed above with respect to both Toriya and Gorman.

Furthermore, while the Office Action states that it would have been obvious to a person skilled in the art at the time of the invention to combine Gorman into Toriya in order to minimize the size of an image for nearly half a million pixels, the Applicant respectfully submits that the Examiner does not fully understand these references, and the resulting arrangement that would flow from their combination. The number of pixels in the present application may alter freely from zero to half a million pixels, for example, depending on the observation distance of the three-dimensional model. It would appear that such a motivation to combine Gorman into Toriya is artificial and not plausible at all. Toriya deals with a parametric presentation (free-form) of discrete data, whereas Gorman, and the system of the present application deal with strictly discreet data, whereby the combination of Toriya and Gorman becomes even more complicated and unrealistic.

In contrast to the teachings of Toriya, Gorman and their combination, the system and method of the present application is based on modifying a polygon model part to be presented graphically by modifying the linear index array while the linear vertex array remains unchanged and the linear index array remains linear. The system and method of the present application only deals with polygon models, i.e. it takes as an input one polygon model, and outputs another polygon model. The preset application performs the transformation between two polygon models by processing a linear index array, i.e. the polygon models are adapted as needed in order to remove and add details to the model. As discussed above, neither Toriya, Gorman nor their combination teach the linear index arrays, nor modifying the act of part of such an array to change the image elements.

Claim 1 is directed to a method for processing a computer aided polygon model comprising forming a linear vertex array which is static and which contains the vertices of the image elements of the polygon model; forming a linear index array whose elements define the image elements of the polygon model by pointing at the vertices of each image element, and which linear index array comprises an active part, the image elements defined by the elements of the active part being included in the polygon model part to be presented graphically; and modifying the active part of the index array to change the image elements included in the polygon model part to be presented graphically while maintaining the linearity of the index array. As discussed above, neither Toriya, Gorman nor their combination teach the linear index

array, nor modifying the act of part of such. Accordingly, the independent claim 1 is allowable over the teachings of Toriya, Gorman and their combination.

Claims 2-4 are dependent upon the independent claim 1. As discussed above, the independent claim 1 is allowable over the teachings of Toriya, Gorman and their combination. Accordingly, claims 2-4 are also allowable as being dependent upon an allowable base claim.

Within the Office Action is stated that claim 9-12 and 17-20 have been rejected for similar reasons as set forth with respect to claims 1-4. Therefore, the Applicants respectfully submit that claims 9 and 17 are also allowable for the same reasons as discussed above with respect to the independent claim 1. Claims 10-12 and 18-20 are dependent upon the independent claims 9 and 17, respectively. Accordingly, claims 10-12 and 18-20 are also allowable as being dependent upon an allowable base claim.

Claims 5-8 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Toriya and Gorman, and further in view of U.S. Patent No. 6,549,200 to Mortlock (hereinafter Mortlock).

Within the Office Action, it is clearly illustrated that the system and method of the preset application are misunderstood by the Examiner, as the Examiner likens animation of a mouth in the Mortlock reference as an active part of a face, to an active portion of an index array. Therefore, it seemingly needs to be clarified that in the system and method of the present application, active/passive relates to a processing load of the equipment, i.e., active is what needs to be presented and passive is such that may be left out. In other words, active and passive portions are not shown in the image, but are portions of an index array that may or may not be assigned a vertex array and changed through processing the computer aided polygon model as described and claimed in the present application.

Furthermore, claims 5-8 are dependent upon the independent claim 1. As discussed above, the independent claim 1 is allowable over the teachings of Toriya, Gorman and thir combination. Accordingly, claims 5-8 are also allowable as being dependent upon an allowable base claim.

It is further stated within the Office Action that claims 13-16 and 21-24 are rejected for similar reasons as set forth with respect to claims 5-8. Therefore, and further due to claims 13-16 and 21-24 being dependent upon the independent claims 9 and 17 deemed allowable, the

Applicants respectfully submit that claims 13-16 and 21-24 are also allowable as being dependent upon an allowable base claim.

Rejections Under 35 U.S.C. §101

Claims 17-24 have been rejected under 35 U.S.C. §101 as being directed toward non-statutory subject matter. Within the Office Action, it was suggested by the Examiner to amend the claim to a body the program on a computer readable medium or equivalent in order to make the claim statutory. By the above amendment, the Applicant has amended claim 17 accordingly, and therefore respectfully submits that claims 17-24 are now directed to statutory subject matter, and thus are allowable.

Double Patenting

Claims 1-24 are provisionally rejected on the ground of non-statutory double patenting over claims 1-12 of co-pending Application No. 10/593,673. In response, the Applicants have submitted the attached Terminal Disclaimer, thereby obviating this provisional rejection that was on the ground of non-statutory double patenting. Therefore, the Applicants respectfully request the Examiner to withdraw this provisional rejection.

For these reasons, Applicants respectfully submit that all of the claims are now in a condition for allowance, and allowance at an early date would be appreciated. Should the Examiner have any questions or comments, they are encouraged to call the undersigned at 414-271-7590 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,

ANDRUS, SCEALES, STARKE & SAWALL, LLP

By Christopher M. Scherer
Christopher M. Scherer
Reg. No. 50,655

Andrus, Sceales, Starke & Sawall, LLP
100 East Wisconsin Avenue, Suite 1100
Milwaukee, Wisconsin 53202
Telephone: (414) 271-7590
Facsimile: (414) 271-5770